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DOCKET NO. K06-161131M/TBS

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AMENDMENTS TO THE CLAIMS:

- Claim 1. (Currently amended) A cross joint comprising:
a cross shaft member comprising:
four shafts each comprising a neck portion and a race portion; and
shoulder portions between adjacent neck portions;
rolling members adapted to rotate on the race portions; and
bearing cups fitted to the respective shafts via the rolling members,
wherein a the round-shaped section of at least one of said shoulder portions has a
center of curvature at an outer side of the cross shaft member,
wherein the round-shaped section does not include a concave angled corner,
wherein the shoulder portions are subjected to roller burnishing for increasing a
hardness of each surface of the shoulder portions and for increasing a residual compressive
stress immediately below each of said surfaces, and
wherein a residual compressive stress at a depth of up to 0.3 mm from each of surface
of the shoulder portions subjected to roller burnishing is larger than a residual compressive
stress at the deeper portions thereof.
- Claim 2. (Previously presented) The cross joint according to claim 1, wherein a race
portion formed on at least one of the bearing cups is subjected to roller burnishing.
- Claim 3. (Previously presented) The cross joint according to claim 1, wherein a
residual compressive stress at a depth of approximately 0.3 mm from each of surfaces of the
shoulder portions subjected to the roller burnishing is equal to or larger than 800 MPa.
- Claim 4. (Previously presented) The cross joint according to claim 1, wherein the cross
shaft member comprises a carbon steel.
- Claims 5-10. (Canceled).
- Claim 11. (Previously presented) The cross joint of claim 1, wherein at least one of said
rolling members comprises a cylindrical roller.

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Claim 12. (Previously presented) The cross joint of claim 1, wherein at least one of said rolling members comprises a needle roller.

Claim 13. (Previously presented) The cross joint of claim 1, wherein one of said shoulder portions comprises a hardness approximately equal to or larger than Hv700 from a surface to at least a depth of approximately 0.2 millimeters.

Claim 14. (Previously presented) The cross joint of claim 13, wherein at least one of said shoulder portions comprises a hardness approximately equal to or larger than Hv700 from a surface to up to a depth of approximately 0.4 millimeters.

Claims 15-39.

Claim 40. (Previously presented) The cross joint of claim 4, wherein the carbon steel comprises a carbon content equal to or larger than 0.42 % by weight.

Claim 41. (Previously presented) The cross joint of claim 1, wherein the bearing cups comprise a carbon steel.

Claim 42. (Previously presented) The cross joint of claim 41, wherein the carbon steel comprises a carbon content equal to or larger than 0.42 % by weight.

Claim 43. (Previously presented) The cross joint of claim 1, wherein
the race portions are subjected to the roller burnishing for increasing a hardness of each surface of the race portions and for increasing a residual compressive stress immediately below each of said surfaces, and
a residual compressive stress at a depth of up to 0.3 mm from each of the surfaces of the race portions subjected to the roller burnishing is larger than a residual compressive stress at a deeper portion thereof.

Claim 44. (Previously presented) The cross joint of claim 52, wherein the residual compressive stress at the depth of approximately 0.3 mm from each of the surfaces of the

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race portions subjected to the roller burnishing is equal to or larger than 800 MPa.

Claim 45. (Canceled).

Claim 46. (Previously presented) The cross joint of claim 43, wherein
the roller burnishing of the race portion increases a surface hardness of the race
portion, and
at least one roller-burnished race portion comprises a hardness approximately equal to
or larger than Hv700 from a surface to at least a depth of approximately 0.2 millimeters.

Claim 47. (Previously presented) The cross joint of claim 46, wherein the at least one
roller-burnished race portion comprises a hardness of approximately equal to or larger than
Hv700 from a surface to up to a depth of approximately 0.4 millimeters.

Claims 48-49. (Canceled).

Claim 50. (Currently amended) A cross joint comprising:
a cross shaft member comprising:
four shafts each comprising a neck portion and a race portion; and
shoulder portions between adjacent neck portions;
rolling members adapted to rotate on the race portions; and
bearing cups fitted to the respective shafts via the rolling members,
wherein a the round-shaped section of at least one of said shoulder portions has a
center of curvature at an outer side of the cross shaft member,
wherein the round-shaped section does not comprise a concave angled corner, and
wherein a residual compressive stress at a depth of up to 0.3 mm from each surface of
the race portions and the shoulder portions subjected to the roller burnishing is equal to or
larger than 800 Mpa.

Claim 51. (Previously presented) The cross joint of claim 1, wherein a residual
compressive stress at a depth of 0.25 mm from each of the surfaces of the shoulder portions
subjected to the roller burnishing is larger than 800 Mpa.

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Claim 52. (Previously presented) The cross joint of claim 43, wherein a residual compressive stress at a depth of 0.25 mm from each of the surfaces of the shoulder portions subjected to the roller burnishing is larger than 800 Mpa.

Claim 53. (Previously presented) The cross joint of claim 1, wherein a residual compressive stress at a depth of approximately 0.1 mm from the roller burnished surface is larger than a residual compressive stress a depth of less than approximately 0.1 mm from the roller burnished surface.

Claim 54. (Previously presented) The cross joint of claim 1, wherein a residual compressive stress at a depth of approximately 0.2 mm from the roller burnished surface is larger than a residual compressive stress a depth of greater than approximately 0.2 mm from the roller burnished surface.

Claim 55. (Previously presented) The cross joint of claim 1, wherein a residual compressive stress at a depth of approximately 0.01 mm from the roller burnished surface is less than a residual compressive stress at a depth of approximately 0.3 mm from the roller burnished surface.